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Comparing Fathers' Physical and Toy Play and Links to Child Behaviour:

An Exploratory Study

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Abstract

Increasing amounts of research show that fathers' involvement in children's lives contributes to the child's social, emotional and cognitive development, however, much of the evidence comes from fathers' caregiving and object play. This exploratory study compared the characteristics of 24 Australian fathers' play in two contexts – toy-play and physical play – and examined the association of these play contexts with children's development.

Correlational analyses revealed few conceptual similarities between toy play and physical play (rough-and-tumble). Rough-and-tumble quality was associated with children's emotional and behavioural functioning and self-regulation, while intrusiveness in toy play related only to self-regulation. The findings are discussed in terms of widening the conceptual and methodological reach of fathering measures in order to better capture the range of fathers' parenting behaviours, and to be able to determine mechanisms of influence.

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Of the many fields of enquiry examining the origins of child development, parenting has attracted significant attention for its obvious centrality to the emotional and physical environment of the child. In particular, parenting styles and interaction, and the child's attachment to parents, have been the dominant constructs for investigation and intervention. The evidence for parents' influence on child development is built on the seminal work of researchers such as Bowlby (1988) and Ainsworth (e.g., Ainsworth, Bell & Stayton, 1974), who worked with mothers as primary attachment figures most involved with their children. But the evolving social movement of involved fatherhood has stimulated a focus on fathers and new theories have emerged to suggest that fathers have a particular and possibly specific role in children's development. Most notably, their interaction is characterised by play, whether in caregiving or leisure (Coyl-Shepherd & Hanlon, 2013; Kokkinaki & Vasdekis, 2014). However, although there is increasing evidence of paternal influences on child outcomes such as language and cognition, researchers are not yet clear on the features of play that are most valuable in terms of child development.

Father-child play

Much of the research on fathers' play focuses on general father-play, which may include toy-play and free play. In many studies, a key focus is comparison between mother and father play behaviour and comparison of parent effects on child outcomes. Some studies show that parents' play interactions are similar yet child outcomes differ. For example, Grossmann and colleagues (Grossmann, Grossmann, Fremmer-Bombik, Scheuerer-Englisch, & Zimmerman, 2002) demonstrated that while parents' play was similarly sensitive and challenging in a toddler-parent play situation, only fathers' play was a predictor of the child's attachment representation at ages 10 and 16. Likewise, Yago and colleagues (2014) found that while parents' play was similar as measured by the Nursing Child Assessment Teaching

Scale (NCATS), infants were more contingently responsive to fathers. However, other studies of father-child play have shown differences in behaviours, with no difference in child outcomes. John, Halliburton & Humphrey (2013) observed qualitatively different patterns of behaviours but similar child outcomes – fathers were more physical and challenging and mothers were more structuring and guiding – but there were no differences in child responsivity to parents. Similarly, Kokkinaki and Vasdekis (2014) found stronger emotional matching and attunement in father-infant interaction than mother-infant, but no differences in child's interest in either parent.

It is important to note that these studies used measures that were identical across mother and father, including constructs such as sensitivity or responsiveness. These studies help us characterise some elements of father play. However, in order to gain more clarity on father interaction, researchers have developed father-specific measures. Regarding the connection between child and father, the Risky Situation paradigm (Paquette & Bigras, 2010) explicitly aims to measure fathers' support of children's exploration, and how this support relates to children's social-emotional competence (Dumont & Paquette, 2013). However this measure concerns primarily the father-child affiliative bond. More specifically, the Parenting Interactions with Children—Checklist of Observations Linked to Outcomes for fathers (PICCOLO-D) (Anderson, Roggman, Innocenti and Cook, 2013) measures play quality in four domains of positive parenting: Affect, Encouragement, Responsiveness and Teaching. Like the original PICCOLO developed for mothers, the PICCOLO-D predicts outcomes across language, cognitive and socio-emotional domains, tested at ages 2 years, 3 years, and pre-kindergarten. The strongest effects from fathers' play were when the children were about 2 years old.

However, in developing this measure, the researchers found that items intended to reflect the evidence-based playful paternal style, such as creating anticipation, teasing, or

behaving unexpectedly, were rated by an expert panel as lower in importance than other domain items, were lower in frequency and variability across the two play settings, did not achieve reliability on scale analyses, and did not predict child outcomes. The PICCOLO-D therefore captures behaviours by fathers and mothers that predict children's developmental outcomes, contains 21 out of the 29 items on the original mothers' PICCOLO, and does not include any unique fathering items. The researchers hypothesise that the lack of statistical differentiation on the playful behaviour items may be due to limitations in the observation settings of the study, moderation of playfulness by other behaviours such as limit setting, or participant reactivity inhibiting expressions of playfulness. The measure therefore is useful for comparing mothers' and fathers' positive parenting in play, but does not point to unique aspects of interaction. A useful point of departure might therefore be a closer analysis of physical play, given that a difference consistently identified in the literature is the prevalence of physical play in father-child interactions.

Fathers and physical play

Studies in this area are comparatively few, and most evidence emanates from studies in the 80s, 90s and the current decade. Fathers' physical play with toddlers and children can be characterised as tickling, wrestling, hugging and other 'big body contact' (MacDonald & Parke, 1986). Much of this vigorous physical play has important emotional characteristics, as playing with an obviously stronger but friendly opponent can arouse excitement and wariness, yet be exhilarating (Sandseter, 2010). The arousing, physically challenging, competitive play that occurs when young children play-wrestle with their fathers has been proposed as a valuable opportunity for children to practise interpreting others' emotions, managing their own strong impulses (e.g. hitting or biting) and coping with failure or frustration (Carson, Burke, & Parkes, 1993; Peterson & Flanders, 2005). This is supported by

several studies that show positive links between child social competence and father-child physical play (Flanders et al., 2009, 2010; Fletcher, StGeorge, & Freeman, 2012; MacDonald, 1987).

Although relatively rare, some studies have sought to observe the qualities of physical play in order to identify mechanisms of influence. In order to obtain sufficient physical interaction data, researchers instruct fathers to play physically, such as tickling and wrestling, approximating rough-and-tumble play (e.g., MacDonald & Parke, 1984; MacDonald, 1987). To identify the behaviours in father-child physical play, Kerns & Bath (1995), and Lindsey, Mize & Pettit (1997a, b) measured the occurrence and contingency of individual parent and child initiations and responses. Others have calculated frequencies on individual behaviours such as parental directiveness and engagement, and child affect (MacDonald & Parke 1984; Ross, 1989), or on children's approach stimulation, avoid stimulation, and overstimulation (MacDonald, 1987). Individual behaviour codes have also been transformed into composites representing mutual compliance, balance and dominance (Flanders et al., 2009; Lindsey & Mize, 2000). The Rough and Tumble Play Quality (RTPQ) measure (Fletcher et al., 2012) was developed to assess the quality of key features of father-child physical play, taking account of the emotional tone of the interaction, the level of synchrony between father and child, and the energetic, playful, competitive aspects of rough-and-tumble play. Global ratings on items representing father, child and dyadic behaviours are summed to give an overall play quality score. The researchers designed an accompanying physical rough-and-tumble play paradigm where fathers were asked to play two wrestling-type games, Get-Up and Sock Wrestle.

The current study

Given therefore the continuing interest in determining pathways of influence for both parents, and the importance of deriving measures and assessment paradigms that directly

apply to fathers' typical play interactions, this study has three aims. The first is to explore the association between toy-play and physical play. The second is to examine the association between the two different types of play and parenting dimensions such as warmth and irritability. The third aim is to examine the association of the two play contexts with children's development. Concerning the last aim, we expected that fathers' physical rough-and-tumble play and toy-play interactions would relate to children's emotional and behavioural problems, and self-regulation but there may be differences in the strength of predictions from each type of play. Based on previous research, we expect that rough-and-tumble play will be more strongly associated than toy-play with emotional and behavioural functioning.

Method

Participants

A total of 24 two-parent families participated in the study. Fathers ranged in age from 32-46 years ($M = 37.4$, $SD = 3.7$). The majority of fathers ($N=18$) had a Bachelor or Post-graduate degree, while only 2 fathers had completed only their School Certificate (10th year of schooling). Most fathers (96%) were employed fulltime and none were unemployed. The majority of fathers identified themselves as being Professionals ($N = 18$). The majority of fathers earned more than \$75,000 (AUS) pa.

Mothers were recruited into the study in order to complete questionnaires on child outcomes. They ranged in age from 30-45 years ($M = 36.3$, $SD = 4.1$). The majority of mothers ($N = 21$) had a Bachelor or Post-Graduate degree and all had completed at least their Higher School Certificate. Most mothers were in the workforce ($N= 19$) on a casual or more frequent basis. Half of the mothers ($N = 12$) identified themselves as being Professionals. Mothers' reported yearly income was highly variable with 71% ($N = 17$) reporting that they

earn less than \$50,000pa and 29% ($N = 7$) reporting that they earn more than \$50,000 (AUS) pa.

Children ranged in age from 42-56 months ($M = 51$, $SD = 3$) and there were more boys ($N = 17$, 71%) than girls. Most children had one sibling ($N = 13$), some had two siblings ($N = 6$), and the rest had no siblings ($N = 5$). Sixteen of the children were first-born, being either the eldest ($N = 11$) or only child ($N = 5$). Three children (12%) were identified as having a medical condition. No children were identified as having a developmental or physical disability. Only 1 child did not attend regular childcare.

Procedure

Ethics, recruitment and data collection are described in Fletcher et al. (2012). Briefly, fathers and mothers of 4 year-old children were recruited through child care centres in an urban regional area of eastern Australia. Two members of the research team visited participants' homes to conduct the research. Fathers took part in two videotaped play sessions with their child. The first play session for all father-child dyads was the toy play session adapted from the 3 Bag Assessment protocol (McCabe, Rebello-Britto, Hernandez & Brooks-Gunn, 2004); as in McCabe et al., two bags were used, one containing two soft hand puppets, a dolphin and a dinosaur; the other, coloured wooden blocks. Fathers were given the two bags, and asked to play for about 10 minutes with the contents of each bag in turn; there were no instructions on what or how to play. The second play session for all father-child dyads consisted of two competitive physical rough-and-tumble games, Sock Wrestle and Get-Up. In Sock Wrestle, both father and child wear 1 or 2 socks each, and the game is played with father and child on their hands and knees. Each tries to get the other's socks off without losing their own. In Get-Up, the father is instructed to try and stand up, while the child is instructed to try and hold the father down.

All play took place on a 2m² square rug. A small camcorder was mounted on a tripod and situated approximately 3 m from the rug. A researcher instructed the father and the child in the procedure of the two bag-games and, after turning on the camera, left the room. At the end of the first play session, the researcher re-entered the room, gave instructions on the two physical games, and again left the room. At the conclusion of the father-child physical rough-and-tumble, the child then played several self-regulation measuring games with the research assistant, taking approximately 30 minutes. These were also recorded. During this time, fathers and mothers completed the questionnaires.

Measures

Parenting dimensions. A measure of the dimensions of fathers' parenting was obtained by using the self-report parenting scales used extensively in Longitudinal Study of Australian Children (LSAC, Zubrick et al., 2014). In this study, we use scales that measure fathers' level of Warmth (Cronbach's $\alpha = .78$) (6 items, sample items: How often do you express affection by hugging, kissing and holding this child?, How often do you hug or hold this child for no particular reason?); Irritability (Cronbach's $\alpha = .71$, 4 items, sample item: How often are you angry when you punish this child?), Consistency (Cronbach's $\alpha = .68$, 5 items, sample item: How often do you think that the level of punishment you give this child depends on your mood?) and Reasoning style (Cronbach's $\alpha = .71$, 5 items, sample item: How often do you explain to this child why he/she was being corrected?). Responses were gathered via a five-point Likert scale, which ranged from 1 (the identified behaviour never or almost never occurred) to 5 (the behaviour occurred always or almost always). Scale scores were the mean of individual items (with no more than two missing items), creating a continuous variable with higher scores indicating higher warmth, more irritability, higher consistency and more reasoning. These parenting dimensions have been shown to have

expected associations with child self-regulation and prosocial skills (Berthelsen & Williams, 2014; Giallo et al., 2014)).

Parenting-efficacy was assessed through a single item global rating used in the LSAC and adapted from the US Early Childhood Longitudinal Study of Children - Birth Cohort (US Department of Education, 2001). Parents describe how they 'feel about' themselves as a parent, with responses ranging from 'not very good parent' to 'very good parent'. Using this same scale, the majority of fathers in Baxter and Smart (2010) rated themselves as average or better than average as a parent.

A measure of the father's involvement with the study child was obtained using the six-item Parent Involvement Scale that has been used extensively in the LSAC (Zubrick, Lucas, Westrupp & Nicholson, 2014). Fathers self-rated the frequency with which they performed caregiving tasks for their children (e.g. bathing, putting them to bed) on a five-point scale ranging from Daily to Not At All (Cronbach's $\alpha = .70$). Baxter (2007) using LSAC data, found that about 10% of fathers undertook these activities daily.

Rough-and-tumble play measures. The Rough-and-tumble quality scale (RTPQ, Fletcher et al., 2012) was developed by constructing items related to warmth, control, sensitivity, winning and losing, physical engagement and playfulness, captured as individual and dyadic affective states and behaviours of father and child, including verbal and non-verbal behaviours. The behaviours were operationalised to form a 16-item scale with five-point Likert-scale qualitative anchors within each item. The ratings increased as a function of frequency and intensity and five global narrative descriptions were developed to describe the overall quality of the play. Convergent validity was demonstrated by positive correlations between physical rough-and-tumble play quality and fathers' report of their Father Involvement ($r = .41, p = .04$). Two independent coders rated the interactions using the RTPQ scale. Interrater reliability scores were high (ICC = .81). Scores were then averaged

for each dyad and across coders to give an overall level of rough-and-tumble play quality (RTPQ total). Cronbach's alpha was calculated to determine the reliability of the RTPQ scale and was found to be very high (Cronbach's $\alpha = .95$). Fathers also indicated that there were no major differences between the videoed play and their regular play with their children.

Toy-play measure. The Early Head Start Parenting Scales (EHS) is a set of rating scales that addresses parent, child and dyadic factors in parent-child play (Brady-Smith, O'Brien, Berlin, Ware, & Fauth, 2000; Fuligni & Brooks-Gunn, 2013), and in this study is used to analyse the toy-play. It has been extensively used in national longitudinal studies in the US (e.g., Tamis-LeMonda, 2004), was used as a validation measure for PICCOLO-D (Anderson et al., 2013), and most often used in the 3 Bag Assessment protocol. There are 10 seven-point coding scales. Six parenting scales address Sensitivity (the extent to which the parent takes the child's perspective, accurately perceives the child's signals, and promptly and appropriately responds to these signals); Positive Regard (demonstration of love, respect, admiration); Stimulation of Cognitive Development (teaching, actively trying to expand the child's abilities); Detachment (under-involvement and lack of awareness, attention, engagement); Intrusiveness (over-involvement or control of child); and Negative Regard (anger, rejection). Three child behaviour scales are Engagement Of Parent (positive interaction with parent), Sustained Attention with Objects (focused exploring of play objects), and Negativity toward Parent (hostility toward parent). A single dyadic scale, Mutuality/connectedness, measures shared perspectives, affect and energy states. Other studies have composited these scales into broader valenced variables such as sensitive (e.g., Barnett, Deng, Mills-Koonce, & Willoughby, 2008) or supportive parenting (e.g., Berlin, Brady-Smith & Brooks-Gunn, 2002), but in this study we wished to retain specificity of constructs and retained the 10 separate scales.

For the coding of the EHS toy-play scales, new coders who did not participate in the home visits were trained, and were blind to fathers' RTPQ scores. (Coders were Master-level students with extensive field experience in family work). Training took approximately 2 months, discussion was held to obtain consensus on discrepant coding, and training continued until coders reached absolute agreement on 80% of items. Discussions were held weekly during the coding phase to prevent coder drift. The analysis uses the average of the two coders' scores on each scale to obtain final scores. Very high ICC agreement scores were seen for all scales of the 2-bags assessment ($ICC > 0.88$). Averaged scores of the 2 raters were created for each scale, and this score was used for all further analyses.

Child emotional and behavioural functioning. The Strengths and Difficulties Questionnaire (SDQ, Goodman, 2001) gives an indication of a child's emotional and behavioural functioning. The SDQ is a widely used and validated screening questionnaire with good internal consistency (e.g., Total Difficulties score, Cronbach's $\alpha = .82$, Hawes & Dadds, 2004) and retest stability (intraclass correlation, $r = .85$; Goodman, 1999). The SDQ consists of 25 questions, divided into five subscales (Hyperactivity, Emotional Problems, Conduct Problems, Peer Problems and Prosocial). The scales were constructed following Goodman (1999); the Peer Problems scales were not used in the analyses because the alphas were problematically low despite re-examination of the raw data (see Table 3). This is not an uncommon problem (Chiorri, Hall, Casely-Hayford, & Malmberg, 2015). A high score in the four problem-oriented subscales indicate greater prevalence of problems, and these four scales are combined to give the Total Difficulties score; the scales were completed by mothers and fathers. The ratings for both parents are used in the correlational analyses to augment our understanding of how differences in parents' perceptions relate to fathers' play. Because our focus is on the relationship between father-child RTPQ scores and child problem

behaviours, we chose to use mother reported child Total Difficulties scores to avoid any bias in reporting of behaviours.

Child self-regulation. Child self-regulation was measured using the Self-regulation scales which were constructed from three games, adapted from McCabe et al. (2004). *Circles* measures motor control: the child is instructed to draw circles as slowly and quickly as possible, and baseline, fast and slow trials are timed. *Head-&-Feet* measures cognitive control: The child is instructed to touch their feet when the researcher says “head” and touch their head when researcher says “feet”. The coding focuses on the number of correct, incorrect & switching behaviours. *Whisper* also measures cognitive control: the child is asked to whisper the names of food or animals on picture cards; the vocalisations are coded on a 4-point scale, (whisper, no response, normal voice/mix, shout). Scores for each game were standardised to have a mean of 0 and standard deviation of 1 (e.g., Carlson, Moses, & Breton, 2002). The polarity of the standardised scores was adjusted so that a higher score was indicative of a higher level of self-regulation. Correlations showed significant relations between the self-regulation measures ($r = .48 - .61, p = .05$). In order to reduce the number of scores, exploratory factor analysis was performed. One component was extracted, with an eigenvalue of 2.22, explaining 55% of the variability. The Cronbach coefficient for these three scores was found to be good ($\alpha = .71$); a composite variable was computed and is used as a Self-regulation (SR) composite variable in the regression analyses presented below.

Analysis plan

Statistical analysis consisted of preliminary analyses for scale construction, and Spearman correlations between the play contexts, parenting dimensions and child behaviours. Paired t-tests were undertaken to examine differences in parents’ ratings of child behaviours in the SDQ. Linear regression analyses (stepwise method) were conducted to examine the

association between the two play scores and the child behaviour measures. For the child emotional and behavioural problems, we used mothers' rating of child behaviour (Total Difficulties scale), adjusting for the fathers' rating of child behaviour as a covariate. For linear modelling, the effects are presented as Estimates (β coefficients) and SE, and Wald p-values for tests of statistical significance at the 5% significance level. Model validation was examined using collinearity diagnostic tools (variance inflation factors), and homoscedasticity test of residuals variance; all assumptions were met.

We used generalizability theory as a rationale for combining the scores of Sock Wrestle and Get-Up – two slightly different types of play – since the measurement context was designed to elicit the key behaviour – quality rough-and-tumble play. An observed score from a single measurement context would be a relatively poor estimate of the true score (Yoder & Symons, 2010, p .19). Similarly, the toy-play of the dyad consisted of approximately 10 minutes of play with 2 bags, blocks and puppets. The coding was undertaken across the entire toy play session, thus incorporating 2 slightly different aspects of toy-play.

All analyses were programmed using SAS v9.4 (SAS Institute, Cary, North Carolina, USA) and Stata v13.1 (StataCorp Ltd, College Station, TX).

Results

Descriptive analyses

In this section, we first present the means, inter-correlations and group differences of the parent and child measures.

Parenting dimensions. Mean levels of the parenting dimensions are reported in Table 1. All positive parenting dimensions (Warmth, Consistency, Reasoning, Parenting-Efficacy and Involvement) were relatively high, while Irritability was low. Warmth was related to

Reasoning, $r = .55$, $p = .01$, and Father Involvement, $r = .45$, $p = .03$. Warmth, Control and Parenting-efficacy were correlated with Mothers' Yearly Income ($r = .43$, $p = .04$, $r = -.66$, $p = .01$, $r = .50$, $p = .01$, respectively), but not with paternal characteristics. There were no parenting dimensions that differed by child sex or birth order.

Play measures. The means for the physical rough-and-tumble play subscales (Get-Up and Sock Wrestle) and of the total RTPQ score were moderately high and are given in Table 1. The two subscales were moderately correlated, $r = .46$, $p = .02$. Sock Wrestle only was correlated with Mothers' Yearly Income, $r = .49$, $p = .02$, and no aspect of rough-and-tumble play was associated with paternal characteristics. There were no differences in RTPQ total scores or subscales for child sex or child birth order.

Insert table 1 about here

The means for the toy-play measure (using the EHS scales), are reported in Table 1. The means were average to high for the positive scales, such as Sensitivity or Parent Positive Regard, and relatively low for negative scales such as Intrusiveness. The inter-correlations of the toy-play scales are reported in Table 2. Sensitivity was positively associated with Parent Positive Regard, Child Sustained Attention, and Mutuality/ connectedness, and strongly negatively associated with Detachment. The Mutuality/ connectedness scale was also positively associated with Child Engagement of Parent, Child Sustained Attention, and inversely correlated with Intrusiveness. Detachment was positively associated with Intrusiveness and Parental Negative Regard. Child Negativity toward Parent was negatively associated with Stimulation of Cognition.

Insert new table 2 about here

The correlations showed overlap but not redundancy, and also highlighted connections between father play behaviour and child behaviours. For instance, the connectedness with father as represented by the dyadic Mutuality/connectedness scale seems to capture the child's attitude to father as well as the child's immersion in activity; at the same time, this connectedness is sensitive. The connectedness seemed more vulnerable to intrusiveness than to other father negative behaviours.

There were no correlations between the toy-play scales and maternal or paternal characteristics. There were significant differences between boys and girls only on three scales from the ten; fathers' Detachment was higher with boys ($M = 3.18$, $SD = 1.22$) than girls ($M = 2.14$, $SD = .69$), $t(22) = 2.08$, $p = .05$; fathers' Mutuality/connectedness was higher with girls ($M = 5.29$, $SD = .49$) than boys ($M = 4.38$, $SD = 1.07$), $t(22) = 2.13$, $p = .01$, and scores on the Child Engagement of Parent were higher for girls ($M = 5.14$, $SD = .69$), than boys ($M = 4.26$, $SD = 1.30$), $t(21) = 2.15$, $p = .04$.

Emotional and behavioural problems. The means and comparisons of mother and father rated SDQ scores are reported in Table 3. Parents' ratings were positively correlated on Emotional Symptoms, $r = .42$, $p = .05$, Conduct Problems, $r = .51$, $p = .01$, Hyperactivity, $r = .56$, $p = .01$, and Prosocial, $r = .42$, $p = .05$, and relatedly, there were no significant differences between mother and father ratings. The strength of the correlations show that parents are largely in agreement regarding these aspects of their children's behaviour. There were no significant differences among boys and girls on scores on any of the SDQ scales, and there was one difference in birth-order, where first born children had higher levels of Emotional Symptoms (as rated by mothers) ($M = 7.33$, $SD = 1.95$) than children with older siblings ($M = 5.75$, $SD = .70$), $t(22) = 2.20$, $p = .04$.

Insert table 3 about here

Self-regulation. Children's scores on the self-regulation subscales varied considerably, as indicated by the standard deviations: Circles final score, $M = 5.78$, $SD = 4.85$; Head & Feet percent correct, $M = 59.85$, $SD = 41.04$; and Whisper final score, $M = 2.56$, $SD = .72$. The mean of the Self-regulation composite is a mean of the z-scores ($M = -.02$, $SD = .81$). The Self-regulation composite and sub-scales did not differ significantly by any child characteristic.

Aim 1: Association between physical rough-and-tumble play and toy-play

The rough-and-tumble play quality scale (RTPQ total) was not related to any of the toy-play scales, with the absolute value of all correlations being ≤ 0.3 and not significantly different to zero. Exploratory post-hoc analyses showed only that the RTPQ subscale Sock Wrestle was positively related to Child Negativity toward Parent, $r = .42$, $p = .04$.

Aim 2: Associations between parenting and play

No parenting dimensions were related to physical rough-and-tumble play, with the absolute value of all correlations being ≤ 0.34 and not significantly different to zero. Parenting dimensions were related to some toy-play scales: Fathers' Irritability was associated negatively with Child Sustained Attention, $r = -.43$, $p = .04$, and Mutuality/connectedness, $r = -.56$, $p = .01$. More surprisingly, fathers' Reasoning was inversely related to Sensitivity, $r = -.44$, $p = .03$, and positively to Intrusiveness, $r = .40$, $p = .05$, and fathers' Parenting-efficacy was negatively related to Stimulation of Cognition, $r = -.48$, $p = .02$. Warmth, Consistency or Father Involvement were not related to any of the toy-play scales. The correlations suggest that when fathers' irritability is higher, child behaviour and the dyadic connection in the play are less optimal.

Aim 3: The association of fathers' play to child behaviour

In this section, we examine first the correlations and then the predictive associations between fathers' play and the two domains of children's behaviour.

Play and child emotional and behavioural problems. Results for correlations of fathers' play to child emotional and behavioural problems are shown in Table 4. First, fathers' physical rough-and-tumble play was strongly negatively related to mother-rated Emotional Symptoms; exploratory post-hoc analysis showed that both subscales of Sock Wrestle and Get-Up were also negatively related to Emotional Symptoms, but Sock Wrestle only was negatively related to mother-rated Total Difficulties. There were no other significant correlations between physical rough-and-tumble play and any of the emotional and behavioural problems rated by mother or father. In a regression analysis, RTPQ was a significant predictor of mother-rated Total Difficulties, $F(1,21) = 8.10, p = .01$), controlling for father-rated Total Difficulties. The R^2 for this model was .244, indicating that rough-and-tumble play explained 24.4% of variability within the model.

Second, in fathers' toy-play, contrary to theoretical expectation, Sensitivity was positively related to both mother- and father-rated Emotional Symptoms. More conventionally, fathers' Negative Regard was moderately positively related to father-rated Hyperactivity and Total Difficulties. Child's Sustained Attention was positively related to mother-rated Emotional Symptoms, and Child's Negativity toward Parent was moderately positively correlated with father-rated child Conduct Problems and Total Difficulties. Mutuality/ connectedness was negatively related to mother-rated Hyperactivity. There were no other associations, the absolute value of all correlations being $\leq .40$ and not significantly different to zero. In sum, the more positive the overall toy-play interaction, the fewer emotional and behavioural difficulties, although the links between higher emotional problems and higher father sensitivity in play, and more sustained attention by the child, appear counter-intuitive. A regression model of toy-play showed no significant predictors of Total

Difficulties from any of the toy-play scales (e.g., Sensitivity, $F(1, 22) = .01$, $p = .96$, Intrusiveness $F(1, 22) = .27$, $p = .61$).

Play and child self-regulation. Results for correlations of fathers' play to child self-regulation are shown in Table 4. First, the RTPQ total score was not correlated to the Self-regulation composite, however, exploratory post-hoc analysis showed that the RTPQ subscale Get Up was highly positively correlated with the Head-&-Feet SR subscale. No other physical rough-and-tumble play was associated with Self-regulation, the absolute value of all correlations being $\leq .37$ and not significantly different to zero. In a regression analysis, rough-and-tumble play was not associated with the Self-regulation composite, $F(1,22) = 3.16$, $p = .09$, but exploratory post-hoc analyses revealed an association between RTPQ total and SR subscale Head-&-Feet, $F(1,20) = 6.94$, $p = .02$, RTPQ explaining 22% of the variation in Head-&-Feet ($R^2 = .258$, adjusted $R^2 = .220$).

Second, fathers' toy-play with children was correlated in several ways to the child's Self-regulation composite and subscales (Table 4). Sensitivity was moderately positively associated with the SR composite, Intrusiveness was inversely associated. Post-hoc analyses showed positive associations between Sensitivity and the SR subscales Circles and Whisper, and the Mutuality/connectedness scale was also positively related to the subscale Head-&-Feet only. There were no other associations, the absolute value of all correlations being $\leq .39$ and not significantly different to zero. In a multiple linear regression analysis, fathers' Sensitivity predicted the SR composite, $F(1,22) = 5.07$, $p = .04$, explaining 15% of the variation in the SR composite ($R^2 = .187$, adjusted $R^2 = .150$); intrusiveness predicted the SR composite, $F(1,22) = 8.96$, $p = .007$, explaining 25.7% of the variation in the SR composite ($R^2 = .289$, adjusted $R^2 = .257$).

Exploratory stepwise multiple linear regression was then employed to identify the strongest predictor of the SR composite, using the three father play predictors, RTPQ,

Sensitivity, and Intrusiveness (see Table 5). The analysis terminated after one step with one predictor extracted, Intrusiveness, $t = 2.99$, $p = .01$. The multiple correlation coefficient ($r = .54$) was significantly different from zero, $F(1, 22) = 8.96$, $p = .01$, and 25.7% of the variation in self-regulation was explained by Intrusiveness alone, ($r^2 = .289$, adjusted $r^2 = .257$). In other words, when accounting for RTPQ and sensitivity, intrusiveness predicted the Self-regulation composite.

To better understand the relation of father play to one subscale of self-regulation, Head-&-Feet, an exploratory stepwise multiple linear regression was employed to identify the strongest predictor of Head-&-Feet, using the three father play predictors, RTPQ, Sensitivity, and Intrusiveness. The analysis terminated after one step with one predictor extracted, RTPQ, $t = 2.63$, $p = .02$. The multiple correlation coefficient ($r = .51$) was significantly different from zero, $F(1, 20) = 6.94$, $p = .02$, and physical Rough-and-tumble play alone explained 22% of the variation in Head-&-Feet ($R^2 = .258$, adjusted $R^2 = .220$). RTPQ was found to be a better predictor of Head-&-Feet than any of the toy-play scales.

Insert table 5 about here

Discussion

This study aimed to investigate the relation between fathers' play and children's emotional and behavioural problems, and self-regulation. The 24 fathers in our study were comparable to fathers in other studies in terms of parenting dimensions and involvement (Baxter & Smart, 2011) and parenting interactions (Tamis-LeMonda et al., 2004). In order to better understand fathers' contribution to child development, it is important to consider a variety of fathering behaviours, and how these differentiated behaviours may affect children. With play

as the focus, the first aim of the study was to investigate the shared characteristics of two play contexts, physical rough-and-tumble play, and toy-based play.

Variation in fathers' play

Physical rough-and-tumble play is theorised to be mutually enjoyable, challenging, and constrained – limits are set to prevent overactivity, aggression or injury; in this study, each rough-and-tumble game had a specified aim, but the implicit and explicit rules of the game were within the control of the players. The quality of this play was assessed using a new observational measure, RTPQ. High quality play is where fathers adjust their own strengths and capacities to allow the child to enjoy him or herself, as well occasionally have the upper hand (Fletcher, StGeorge, & Freeman, 2012). The average level of fathers' rough-and-tumble play quality in this study was high, and did not differ for sons and daughters, which follows other research showing that generally, fathers play rough-and-tumble as often with girls as boys (Paquette et al., 2003).

Toy-play by contrast can have elements of exploration and goal-orientation, as well as having no means-end (Gray, 2013). In this study, father and child played with blocks and puppets. We measured the quality of this toy-based play using a robust measure of parenting interaction validated with fathers and mothers (Tamis-LeMonda et al., 2004). The interaction scales included six positive and negative parent scales, three child scales and one dyadic scale. We retained the child behaviour scales in order to better understand the relational aspects of father-child play. Analyses by sex showed that toy-play with daughters appeared to be more connected than with sons: fathers were less detached, daughters engaged the father more, and the dyad was closer. Similar distinctions were reported in Tamis-leMonda et al. and Barnett et al. (2008). More generally in the literature, fathers tend to treat girls with

greater responsiveness and sensitivity, encouraging their expressiveness, and may be more authoritarian with boys (Conrade & Ho, 2006; Lindsey et al., 1997a).

Theoretically, we expected a correlation between rough-and-tumble and the Mutuality/connectedness measure, since the RTPQ assesses individual and dyadic behaviours. We also expected a moderate negative correlation between physical rough-and-tumble and detachment, given that the detachment scale measures father's emotional involvement with his child. However, physical rough-and-tumble play quality was not related to any of the toy-play measures, with one exception: when fathers' physical rough-and-tumble quality in Sock Wrestle was high, children showed less anger, hostility or dislike towards the father in the toy-play context. Although this finding was of a moderate correlation extending to one game only, it may be that higher quality Sock Wrestle – social, challenging and enjoyable – helps to establish or maintain acceptance of or trust in the father.

Regarding the first aim therefore, a provisional inference is that physical play and toy-play are interactional contexts that elicit different father behaviours, despite the similarity of some of the underlying theoretical constructs and similar observational rating methods. However, the tangible differences between the contexts are vast, and thus the materials, instructions, and physical proximity may very well 'pull' for different behaviours or even different kinds of the same category of behaviours. There is immeasurable variation in construct definitions and operationalisations and many authors interchangeably use warmth and positive regard, control and intrusiveness (for example, for discussion on definitions of sensitivity, see Pelchat (2003) or van den Boom (1997)), and further research is clearly required to better understand how to characterise fathers' toy play and roughhousing interaction in order to measure their relevance to children's development. For example, recall that in this sample, fathers' rough-and-tumble play did not differ between sons and daughters, whereas their toy-play did. The toy-play context may elicit a greater range of negative and

positive cues and responses thus giving insight into parenting more generally, while the rough-and-tumble has a more specific and narrow aim that centres on playful social interaction. Being clear about what type of play is to be measured is also important; for example, toy-play in this study arguably extends into ‘pretend play’ with the use of the puppets, as also with block play when children and fathers invoke castles and forests into their play.

Fathers’ play and parenting

The second aim of the study was to gain a stronger picture of how play relates to parenting dimensions such as warmth or irritability. Of interest was the lack of important correlations of **either** play context to the parenting dimensions. Physical rough-and-tumble play was not associated with any parenting dimension, with the exception of lower child negativity toward parent linked to higher quality Sock Wrestle. Five toy-play scales were related to parenting dimensions. The findings suggest that connectedness in father-child play was especially vulnerable to negative father behaviours such as irritability and intrusiveness, (given that reasoning was related to intrusiveness). The connectedness also reflected the child’s high motivation to interact with father as well as his/her contentment in exploration through play. Such dyadic orientation and satisfaction is related to self-regulation and fewer problem behaviours (Koschanska, Aksan, Prisco, & Adams, 2008)

An awkward nuance in fathers’ parenting was the negative association of his parenting-efficacy with his stimulation of cognition or ‘effortful teaching’. Fathers are more likely to be instructive and directive, although the findings are mixed (Leech, Salo, Rowe & Cabrera, 2013), and this style could be viewed as not elaborative or enhancing of development. It may be that confident fathers are also more typically directive or instructional in their conversation. However, this is a 1-item global rating, and should be

explored further with a multi-dimensional measure that has robust psychometric properties. Taken together, the associations suggest that fathers' negative parenting may be more deleterious for social or relational interaction, and that there is potential to capture this outcome from analysis of play.

Fathers' play and child behaviour

The third aim of the study was to test associations of play with child emotional and behavioral functioning and self-regulation. Physical play and toy-play related differentially to both of these constructs. Lower levels of total difficulties (and specifically emotional symptoms) were associated with higher quality physical rough-and-tumble play, whereas toy-play was not associated with children's emotional and behavioral functioning. As has been theorised before (Flanders et al., 2010; Fletcher et al., 2012), the intimate, emotionally demanding atmosphere of rough-and-tumble can provide a real-world opportunity for a child to observe and practice important social skills such as recognising emotions, suppressing impulse and aggression, and sustaining reciprocal play (Nangle, Hansen, Erdley, & Norton, 2010). This competence is strongly linked with long-term outcomes such as relationships with others, language, literacy and numeracy (Jones, Brown, & Lawrence, 2011; Landry & Smith 2010; Luecken, Roubinov, & Tanaka, 2013).

Based on previous research, we expected to see positive associations between fathers' play and child self-regulation (Kochanska, Askan, Prisco & Adams, 2008). Although there were a range of correlations between the two play contexts and the self-regulation composite, there was only one significant predictor variable: higher intrusiveness as measured in the toy-play setting was associated with poorer self-regulation. It is possible that the toy-play may not have provided enough challenge for the children, thus limiting fathers from engaging in higher levels of support that foster self-regulation competencies. However, the link between

intrusiveness and poor child outcomes is firmly established (Egeland & Pianta, 2003); children with fathers who are intrusive and negative in their interactions are likely to be hyperactive or impulsive (Keown, 2012), and aggressive and not accepted by peers (Marsiglio et al., 2000). Intrusive parenting has negative effects on children's abilities to regulate attention and behaviour (Taylor et al., 2013), which ultimately affects achievement in school (Clincy & Mills-Koonce, 2013). However, there is more evidence for mothers than fathers and the findings are mixed; for example, Cabrera, Shannon, and Tamis-LeMonda (2007) found fathers' intrusiveness did not have a long-term effect on social-emotional regulation and Shannon et al. (2002) similarly found no relations between fathers' intrusiveness and child cognitive outcomes. It may be that the varied operationalisations of intrusiveness do not tap into the finer grained analysis of control as coercive (arbitrary, over-controlling power) or confrontive (reasoned, negotiated power) as described by Baumrind (2012). Given that intrusiveness was not associated with emotional and behavioural functioning in this study, is sometimes higher in fathers than mothers (e.g., Hallers-Haalboom et al., 2014), and other contrary findings (e.g., Martins et al., 2013), it will be important to scrutinize this aspect of paternal parenting.

A point of interest was the statistical association between the Self-regulation subscale Head-&-Feet, and the RTPQ subscale Get-Up, a game where the paradoxical aim ("hold your father down") is immediately obvious to the children. This type of stimulating, teasing and contradictory behaviour with children tends to be more typical of men than women (Keltner, 2001), notable in fathers (Labrell, 1994), and may promote development of neural connections (Neely, Walter, Black, & Reiss, 2012), executive functions (Pexman & Glenwright, 2007) and social and emotional regulation (Semrud-Clikeman & Glass, 2010). Furthermore, horizontal qualities of power are more likely when teasing and play occur

(Miyazaki, 2004), suggesting warmer relationships where the parent as playmate is allowing the child to practice social skills.

Limitations. This was an exploratory study, with a small sample size, which suited a stepwise regression method (e.g., Giles, Legare & Samson, 2008) and constrained the complexity of the equations. The sample was homogenous in terms of relatively high education and income, and this may have limited the variance in fathers' behaviour, given the known links between environmental factors and quality of parenting (Chazan-Cohen et al., 2009). In addition, the data is cross-sectional and therefore we must speculate on causal pathways until longitudinal studies assessing fathers' play are conducted. The strengths of the study lie in the use of independent multiple methods (self-report and observational), videoing ecologically valid and varied play settings, and utilizing conceptually varied behavioural measures to critically examine fathers' play interactions. Another angle of study would be to account for a wider range of connections between family members, including siblings and co-parenting, in order to better account for the influence of the family system as well as individuals on children's development. In addition, more in-depth study of emotional regulation will be an important next step as we seek to understand social-emotional competence. Although the SDQ is widely used in studies of parenting, other measures may tap additional emotional areas, either through tests of executive function such as the BRIEF (Sherman & Brooks, 2010) or alternative composites, for example, the SEARS-P measures Self-Regulation/Responsibility, Social Competence, and Empathy (Merrell, Felver-Grant & Tom, 2011).

Conclusion

The exploration of fathering and its effect on children continues as a field of immense interest, at least in part because of the debate about the distinctiveness or communality of

fathering and mothering. Fagan et al. (2014) conclude that we should not conceptualise fathering as different to mothering, because there is not sufficient evidence that the constructs of fathering and mothering are unique, effects on children are generally similar, and mothers' and fathers' caregiving roles are conflating. Nevertheless, while the basic human psychological processes are similar, there is strong evidence for differences between mothers and fathers in frequency, intensity and timing (Cabrera et al., 2011; Madjanzic et al., 2014), and research continues to find fathers more playful (Kokkinaki & Vasdekis, 2014). At the same time, we acknowledge that typologies of fathering vary within and across cultures (Paquette, 2000; Roopnarine, Lasker, Sacks & Stores, 1998). In view of the increasing pressures on societies around the world, it is important that we understand the range of psychological resources that men can provide for children in order to facilitate fathers' optimal involvement in children's lives.

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Table 1. Means for fathering scales

| <i>Scale (subscale)</i> | | <i>Mean (SD)</i> |
|-----------------------------------|--------------------------------|------------------|
| Parenting dimensions (range 1-5) | Warmth | 4.48 (.41) |
| | Consistency | 4.03 (.56) |
| | Irritability | 2.14 (.55) |
| | Reasoning | 4.13 (.65) |
| | Parenting-Efficacy | 4.13 (.80) |
| | Father Involvement | 4.44 (.40) |
| Rough-and-tumble play (range 1-5) | RTPQ total | 4.19 (.46) |
| | (Get-Up) | 4.15 (.54) |
| | (Sock Wrestle) | 4.23 (.54) |
| Toy-play scales (range 1-7) | Sensitivity | 4.79 (1.09) |
| | Stimulation Of Cognition | 3.94 (1.07) |
| | Parental Positive Regard | 4.52 (1.07) |
| | Intrusiveness | 2.77 (1.31) |
| | Parental Negative Regard | 1.75 (.59) |
| | Detachment | 2.88 (1.18) |
| | Child Engagement Of Parent | 4.52 (1.21) |
| | Child Sustained Attention | 5.52 (1.57) |
| | Child Negativity toward Parent | 2.08 (.60) |
| | Mutuality/connectedness | 4.65 (1.02) |

Table 2. Inter-correlations of toy-play scales

| | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> | <i>6</i> | <i>7</i> | <i>8</i> | <i>9</i> |
|-----------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 1. Sensitivity | - | | | | | | | | |
| 2. Stimulation of cognition | 0.22 | | | | | | | | |
| 3. Parental positive regard | .66** | 0.07 | | | | | | | |
| 4. Intrusiveness | -.68** | 0.04 | -.52** | | | | | | |
| 5. Parental negative regard | -.46* | -0.39 | -0.21 | 0.30 | | | | | |
| 6. Detachment | -.81** | -0.34 | -.51* | .45* | .63** | | | | |
| 7. Child engagement of parent | 0.35 | 0.01 | 0.07 | -0.28 | -0.11 | -0.21 | | | |
| 8. Child sustained attention | .43* | 0.14 | 0.30 | -0.19 | -0.31 | -0.39 | .56** | | |
| 9. Child negativity toward parent | -0.09 | -.47* | -0.02 | 0.10 | 0.39 | 0.18 | -0.23 | -0.19 | |
| 10. Mutuality/connectedness | .56** | 0.11 | 0.39 | -.41* | -0.26 | -0.37 | .85** | .60** | -0.26 |

* $p < 0.05$; ** $p < 0.01$

Table 3. Mother and father ratings of child emotional and behavioural problems

| Scale | Range | Father | | Mother | | Comparisons | |
|---------------------------------|-------|--------|-------------|--------|-------------|--------------------------------------|---------------------|
| | | Alpha | Mean (SD) | Alpha | Mean (SD) | Correlation | t-test Significance |
| Emotional symptoms | 0-10 | .62 | 1.63 (1.79) | .70 | 1.78 (1.78) | $r = .42, p = .05$ | $t(22)=0.22, p=.83$ |
| Conduct problems | 0-10 | .54 | 1.38 (1.40) | .59 | 1.91 (1.51) | $r = .51, p = .01$ | $t(22)=1.59, p=.17$ |
| Hyperactivity | 0-10 | .80 | 3.83 (2.62) | .80 | 4.18 (2.59) | $r = .56, p = .02$ | $t(21)=0.69, p=.51$ |
| Peer problems ^a | 0-10 | .47 | 1.79 (1.50) | .05 | 0.87 (0.87) | $r = .08, p = .71$ | $t(22)=2.47, p=.02$ |
| Prosocial | 0-10 | .68 | 8.21 (1.64) | .76 | 7.78 (2.11) | $r = .42, p = .05$ | $t(22)=.81, p=.43$ |
| Total difficulties ^b | 0-40 | .77 | 8.43 (4.87) | .71 | 8.68 (4.21) | $r = .36, p = .08$ | $t(20)=.34, p=.74$ |

Notes. ^aThis sub-scale was not used in further analyses due to the low internal reliability, although the items were used in the composite Total difficulties score. ^bTotal Difficulties is made up of items from all scales except the Prosocial scale.

Table 4. Correlations of father play measures with child behaviour

| <i>Scale (subscale)</i> | <i>Emotional symptoms</i> | | <i>Conduct</i> | | <i>Hyperactivity</i> | | <i>Prosocial</i> | | <i>Total Difficulties^a</i> | | <i>Self-regulation^b</i> | <i>(Circles)</i> | <i>(Head-&Feet)</i> | <i>(Whisper)</i> |
|----------------------------|---------------------------|--------------|----------------|---------------|----------------------|--------------|------------------|-----------|---------------------------------------|--------------|------------------------------------|------------------|-------------------------|------------------|
| | <i>Mo</i> | <i>Fa</i> | <i>Mo</i> | <i>Fa</i> | <i>Mo</i> | <i>Fa</i> | <i>Mo</i> | <i>Fa</i> | <i>Mo</i> | <i>Fa</i> | | | | |
| RTP total ^c | -0.52* | -0.16 | -0.01 | -0.21 | -0.09 | -0.05 | -0.16 | -0.12 | -0.32 | -0.26 | 0.37 | 0.24 | 0.56** | 0.10 |
| (Sock Wrestle) | -0.43* | -0.17 | 0.03 | -0.28 | -0.26 | -0.14 | -0.10 | -0.30 | -0.50* | -0.32 | 0.26 | 0.29 | 0.31 | 0.09 |
| (Get-Up) | -0.44* | -0.13 | -0.20 | -0.19 | -0.11 | -0.10 | -0.08 | 0.08 | -0.32 | -0.28 | 0.37 | 0.24 | 0.59** | 0.09 |
| Sensitivity | 0.51* | 0.45* | -0.18 | -0.10 | -0.34 | -0.18 | 0.12 | 0.15 | -0.11 | -0.09 | 0.46* | 0.45* | 0.36 | 0.54** |
| Stimulation of cognition | 0.21 | 0.07 | -0.36 | -0.16 | -0.13 | -0.33 | 0.08 | 0.05 | -0.07 | -0.28 | -0.16 | -0.12 | -0.17 | 0.04 |
| Parental positive regard | 0.29 | 0.27 | -0.10 | -0.25 | 0.04 | 0.27 | -0.14 | 0.11 | 0.19 | 0.19 | 0.38 | 0.38 | 0.35 | 0.31 |
| Intrusiveness | -0.36 | -0.27 | -0.18 | 0.11 | -0.03 | 0.18 | -0.18 | 0.11 | -0.17 | 0.16 | -0.53** | -0.46* | -0.42* | -0.45* |
| Parental negative regard | -0.15 | -0.04 | 0.27 | 0.34 | 0.20 | 0.46* | -0.37 | -0.16 | 0.22 | 0.45* | -0.05 | -0.26 | -0.05 | -0.03 |
| Detachment | -0.31 | -0.31 | 0.19 | 0.19 | 0.19 | 0.18 | -0.41 | -0.23 | 0.07 | 0.14 | -0.16 | -0.30 | -0.08 | -0.21 |
| Child engagement of parent | 0.18 | 0.19 | 0.23 | -0.01 | -0.39 | -0.20 | -0.01 | -0.04 | -0.27 | -0.14 | 0.39 | 0.37 | 0.38 | 0.36 |
| Child sustained attention | 0.45* | -0.04 | -0.10 | -0.13 | -0.34 | -0.32 | 0.15 | 0.09 | -0.01 | -0.30 | 0.27 | 0.29 | 0.20 | 0.36 |
| Child negativity to parent | 0.08 | 0.06 | 0.26 | 0.57** | 0.26 | 0.35 | -0.16 | -0.09 | 0.40 | 0.43* | -0.11 | -0.28 | 0.00 | -0.03 |
| Mutuality/connectedness | 0.27 | 0.20 | 0.05 | -0.14 | -0.46* | -0.27 | -0.03 | -0.01 | -0.30 | -0.21 | 0.35 | 0.38 | 0.42* | 0.28 |

Notes: ^aComposite of Emotional Symptoms, Conduct problems, Peer problems and Hyperactivity; ^bComposite of Circles, Head & Feet, and Whisper; ^cComposite of Sock Wrestle and Get-Up. *p<0.05; **p< 0.01

Table 5. Stepwise regression analyses for father play and child behaviour

| <i>Dependent variable</i> | <i>Predictor variables</i> | B | S.E. | β | t | p-value |
|--|----------------------------|-------------|-------------|---------------------------|-------------|----------------|
| Emotional & behavioural Problems-Total Difficulties ^a | RTPQ | -.32 | .10 | -.53 | 2.85 | .010 |
| Self-regulation (SR composite) | RTPQ | | | .25 | 1.37 | .184 |
| | Sensitivity | | | .04 | .153 | .880 |
| | Intrusiveness | -.33 | .11 | -.54 | 2.99 | .007 |
| Head-&-Feet (SR subscale) | RTPQ | 2.74 | 1.04 | .51 | 2.63 | .016 |
| | Sensitivity | | | .35 | 1.92 | .070 |
| | Intrusiveness | | | -.34 | 1.75 | .096 |

Notes. B = unstandardised coefficient; β = standardised coefficient. ^aControlling for father-rated Total Difficulties score.